



FACT SHEET



BMDO FACT SHEET 302-00-11

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VIRTUAL DATA CENTER

INTRODUCTION

The explosion in Information Technology (IT), including computer processor power, database management system capabilities, network bandwidth expansion, and the evolution of World Wide Web technology, presents new opportunities to facilitate data exploitation, to expand data availability, and to enhance critical information resources. The Ballistic Missile Defense Organization (BMDO) Virtual Data Center (VDC) incorporates the best features from this IT revolution to provide the next generation solution to data accessibility and distribution.

THE BMDO DATA CENTERS PROGRAM

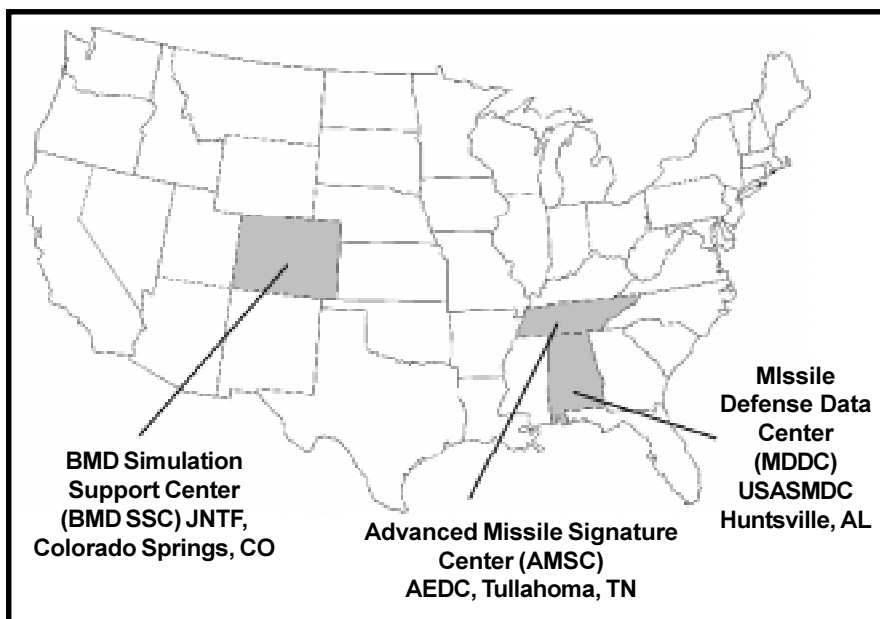
Over the past fifteen years, BMDO has invested several billion dollars in test execution and experimental measurement and technology demonstration programs to collect one-of-a-kind data and information needed to develop Ballistic Missile Defense (BMD) systems. The effective exploitation of this highly technical data and information depends on an efficient process to provide the widest possible access and distribution of these assets to the engineers, analysts, and experts responsible for developing BMD systems.

BMDO established the Data Centers Program in 1988 and designated data and information repositories. The BMDO Data Centers are more than just data archive libraries. They are also full service organizations providing data management and expertise to the BMD system development community.

The BMDO Data Centers Program is the current solution for supporting users of BMD scientific and technical data and information. The three BMDO Data Centers are located at the Advanced Missile Signature Center (AMSC) hosted by the Arnold Engineering and Development Center, Arnold AFB, TN; the Missile Defense Data Center (MDDC) hosted by the US Army Space and Missile Defense Command (SMDC) in Huntsville, AL; and the BMD Simulation Support Center (SSC), co-located with the Joint National Test Facility, Schriever AFB, CO.

The Data Centers presently archive BMD technical data in excess of tens of terabytes, plus additional volumes of documents, video, and analog recordings from BMD tests, experiments and technology demonstrations. The Data Centers inventory these materials for archive and create catalogs and databases to aid in searching the information repositories.

To access data and information at the Data Centers, users identify what information is required and request the Data Center to act upon the request. The Data Centers also provide resident data expertise to assist users in locating and using data archived at their facilities, and they maintain extensive analysis support capabilities and subject matter experts at their sites to help visiting technical personnel.



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THE VDC VISION

The concept of providing readily accessible electronic connectivity to Data Centers' resources and services has been part of the BMDO vision for the Data Centers Program almost since its inception. However, technology has only recently matured sufficiently to achieve a workable and cost-effective solution.

The advances in Information Technology and the Internet revolution, particularly in World Wide Web technologies, help make this vision of electronic connectivity and easily accessible BMD Data Centers a reality.

The impetus for the current "Virtual" Data Center initiative evolved from a March 1996 recommendation of the Independent Scientific and Engineering Group (ISSEG) – "The BMDO needs to create a system that will allow analysts access to data and information from geographically distributed locations."

As BMDO's former Chief Architect/Engineer, Dr. Bruce Pierce, succinctly paraphrased the ISSEG recommendation: "...place data on the analyst's desktop..."

THE VDC SOLUTION

The VDC will be a single point-of-entry to a wide spectrum of resources that analysts and modelers can remotely access from their secure workstations. VDC users will have remote access to ballistic missile data, information, and tools from widely distributed locations. The VDC will be BMDO's premier, mission-oriented, secure communication capability for exchanging data and information among the Modeling and Simulation, Test and Evaluation, Wargaming, and system engineering communities. A major objective of the VDC is enhanced analysis and technical support for BMD Major Defense Acquisition Programs (MDAPs).

THE VDC SOLUTION [CONTINUED]

The "Virtual" Data Center builds on the current Data Centers Program concept of operation. BMDO Data Centers will continue their role as repositories for BMD data and information and as sources of data expertise. The VDC adds network connectivity between the Data Centers and their users. This connectivity also extends to additional information repositories and Centers of Expertise that make available specialized resources of data, information, and expertise.

The key functional capabilities the VDC will add to the Data Centers program include:

- Network connectivity among information repositories, analysts, researchers, and systems engineers
- A secure network environment with a single sign-on access solution
- Exploitation of current Internet and Web technologies to enhance user access and ease-of-use, including E-mail, news groups, and forums for information transfer
- Search mechanisms that support interoperability among distributed data bases and catalogs
- On-line data and information searches
- On-line data manipulation and display
- On-line processing
- Automated product ordering and delivery
- Remote access to models and simulations

The VDC network is based on a high speed ATM backbone. Individual node sites are tied directly to the ATM backbone via dedicated links to one of seven or eight network communication hubs. Each node or hub site will include NSA approved encryption hardware that will allow the network to operate in a secure mode.

The VDC resource server sites maintain Web Servers that support searches of data, information, catalogs and other interactive services. The User Client Sites host Web browsers that provide access to the VDC network services and the Resource Server Sites. The user nodes and resource sites currently available on the VDC network as of Initial Operating Capability [IOC] in FY99 are listed in the table below. Additional user nodes will also be added as resources permit.

VDC Sites Scheduled for 2000

- | | |
|---|---|
| • Advanced Missile Signature Center (AMSC) - Arnold AFB, TN | • Missile Defense Data Center (MDDC) - Huntsville, AL |
| • Advanced Research Center (ARC) - Huntsville, AL | • MIT/Lincoln Laboratory - Bedford, MA |
| • AFRL - Hanscom AFB, MA | • Naval Weapons Analysis Station (NWAS) - Noico, CA |
| • AFRL - Edwards AFB, CA | • Naval Air Warfare Center, China Lake, CA |
| • Boeing - Huntsville, AL | • Naval Surface Warfare Center (NSWC) - Dahlgren, VA |
| • BMDO HQ - Pentagon | • Optical Discrimination Analysis - Huntsville, AL |
| • JHU/Applied Physics Laboratory Baltimore, MD | • US Army SMDC - Huntsville, AL |
| • Joint National Test Facility - Schriever AFB, CO | • SYTech - Huntsville, AL |
| • Kwajalein Missile Range, Marshall Islands | • Wright Patterson AFB, OH |